

Emergency Room Visits by Age and Sex

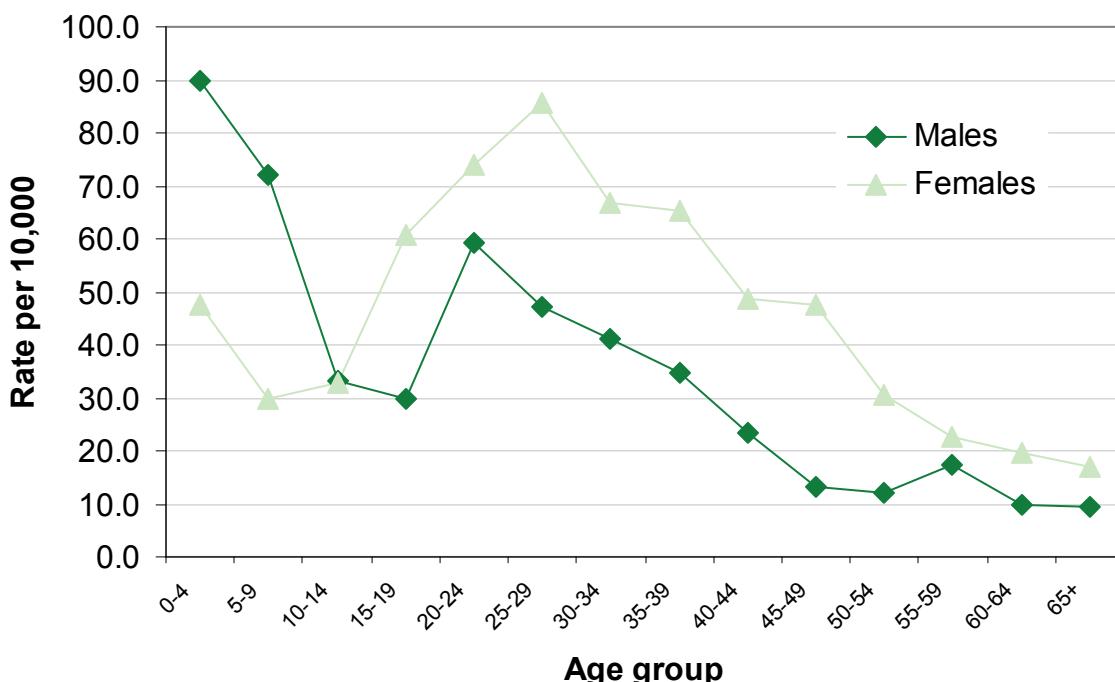
The age and sex distribution of ER visits mirrors prevalence trends, suggesting asthma severity does not vary by age or sex.

There were a total of 2394 visits (38.7 per 10,000) to the Emergency room by Vermont residents in 2003, up from 2221 visits (36.1 per 10,000) in 2002. Some of these visits were multiple visits by the same person. In 2003:

- 89.6% of these people made only one visit to the ER,
- 7.6% made 2 visits to the ER, and
- 2.7% made three or greater visits to the ER.

In addition to having overall higher prevalence rates than men, females visited the ER for their asthma more often than males in 2003, with 1393 visits or 44.2 visits per 10,000 population compared to 1001 visits, or 32.9 visits per 10,000 among males. Within each gender, females aged 20-39 and males aged 0-9 had the highest rates of ER visits. This age/gender distribution is similar to what is seen nationally. Vermont data tables are presented on the following page.

Figure 15. Emergency room visits for asthma by age and sex – Vermont residents, 2003.



Data source: Hospital Discharge Data

NOTE: ER visits that result in a hospital admittance are excluded

Emergency Room Visits by Age and Sex

Table 16. Emergency room visits for asthma by age and sex – Vermont residents, 2003.

	Total		Males		Females	
Age group	#	Rate (per 10,000)	#	Rate (per 10,000)	#	Rate (per 10,000)
0-4	231	69.5	155	89.8	76	47.5
5-9	183	51.3	131	71.9	52	29.8
10-14	141	33.0	73	33.4	68	32.7
15-19	204	44.6	70	29.7	134	60.6
20-24	303	66.5	139	59.3	164	74.1
25-29	220	66.1	79	47.0	141	85.6
30-34	201	54.0	76	41.1	125	66.7
35-39	223	50.4	75	34.8	148	65.2
40-44	190	36.2	60	23.4	130	48.6
45-49	162	30.8	34	13.2	128	47.7
50-54	104	21.6	29	12.3	75	30.7
55-59	79	20.1	34	17.3	45	22.8
60-64	43	14.9	14	9.9	29	19.8
65-69	20	9.2	8	7.6	12	10.7
70-74	27	14.1	7	8.2	20	18.8
75-79	30	18.4	7	10.0	23	24.7
80-84	17	14.6	6	13.3	11	15.3
85+	16	14.3	4	12.0	12	15.3
All ages	2394	38.7	1001	32.9	1393	44.2

Indications of Poor Asthma Management

Data source: Hospital Discharge Data
 NOTE: ER visits that result in a hospital admittance are excluded

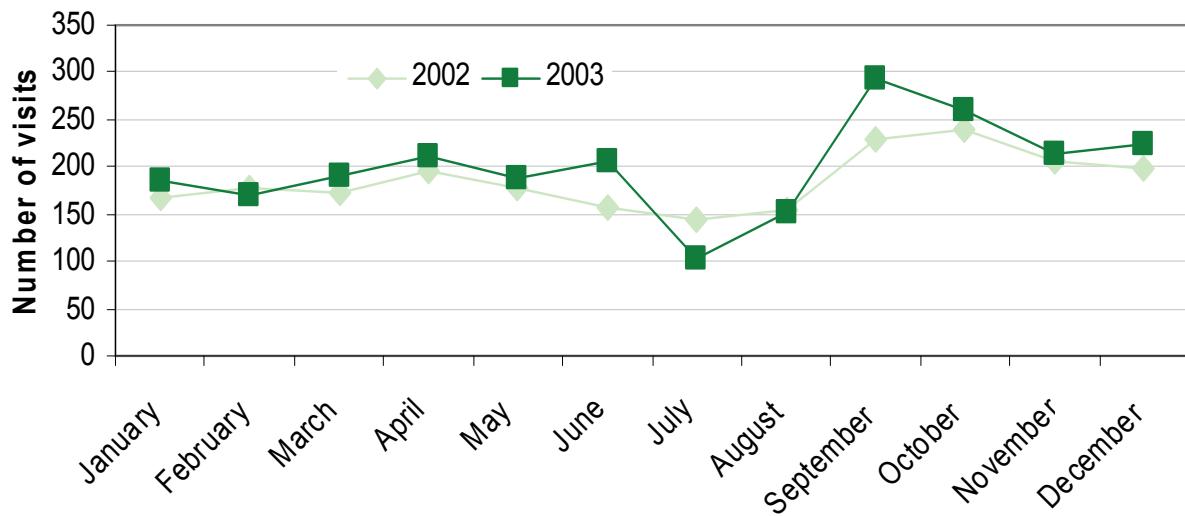
Temporal Patterns of Emergency Room Visits

With the seasonal variation in asthma-related ER visits in Vermont, the media could play a valuable role in publicizing the importance of asthma self- and clinical care management during times of the year with the highest rates of ER visits.

Frequency of ER visits among people with asthma often vary by the time of year. The reason for this variation remains unclear however there are several known causes of asthma attacks that may correspond with seasonal patterns. Tree and grass pollen, known allergens that can cause asthma attacks, have the highest counts in spring and early fall. Cold air, or changes in weather may also cause asthma attacks. (source: National Heart, Lung, and Blood Institute)

In Vermont, ER visits for asthma peak in September and October, as demonstrated in Figure 17.

Figure 16. Emergency Room visits for asthma by month – Vermont residents, 2002-2003 combined.



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Table 17. Emergency Room visits for asthma by month – Vermont residents, 2002-2003.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	#	#	#	#	#	#	#	#	#	#	#	#
2002	166	177	173	196	178	158	145	155	229	240	205	199
2003	185	170	190	212	187	205	104	151	293	259	214	224

Frequency of Emergency Room and Urgent Care Visits

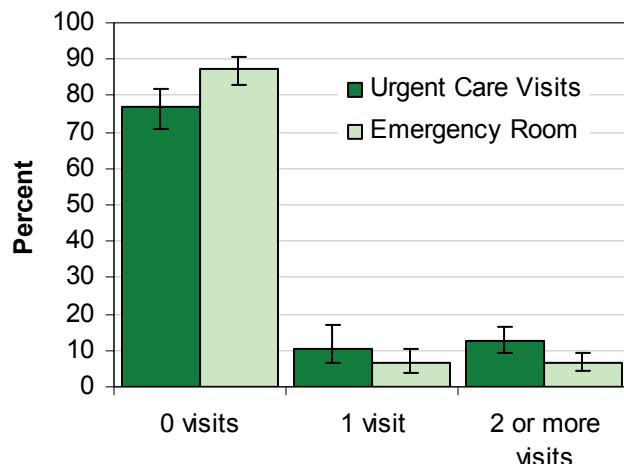
With roughly 1 in 8 Vermonters with asthma visiting an ER in the past year, increasing self and clinical care management of Vermonters with asthma should decrease the frequency of ER visits.

With proper management of asthma, many asthma symptoms can be prevented, resulting in a reduction of visits to the Emergency room or doctor's office for urgent care.

Urgent Care: Almost one quarter of people with asthma visited their health care professional for urgent treatment for worsening symptoms in the past year. This percent has remained fairly constant over the last four years.

Emergency Room: Roughly 13% of Vermonters with asthma visited the ER* for their asthma in the past 12 months. This percent has also remained fairly constant over the last four years.

Figure 17. Frequency of visits to a health care provider for urgent treatment of worsening symptoms and emergency room visits for asthma in past year – Vermont residents with asthma, 2005.



DATA TABLES

Table 17. Frequency of visits to a health care provider for urgent treatment of worsening symptoms and emergency room visits for asthma in past year – Vermont residents with asthma, 2002-2005.

	0 visits		1 visit		2 or more visits	
	Dr. Office - Urgent Care	ER*	Dr. Office - Urgent Care	ER*	Dr. Office - Urgent Care	ER*
	<u>% (95% CI)</u>	<u>% (95% CI)</u>	<u>% (95% CI)</u>	<u>% (95% CI)</u>	<u>% (95% CI)</u>	<u>% (95% CI)</u>
2002	74.6 (69.0-79.6)	85.7 (81.0-89.4)	12.3 (8.7-17.1)	6.9 (4.6-10.2)	13.1 (9.5-17.7)	7.4 (4.7-11.4)
2003	80.4 (75.1-84.7)	87.9 (83.2-91.5)	10.2 (6.9-14.7)	7.5 (4.6-12.0)	9.5 (6.7-13.3)	4.5 (2.8-7.3)
2004	75.8 (71.4-79.7)	87.3 (83.8-90.1)	11.2 (8.7-14.4)	6.5 (4.5-9.5)	13.0 (9.9-16.8)	6.2 (4.4-8.6)
2005	76.7 (70.7-81.7)	87.2 (82.8-90.6)	10.6 (6.5-16.8)	6.4 (3.8-10.6)	12.7 (9.6-16.7)	6.5 (4.5-9.2)

Risk Factors for Emergency Room and Urgent Care Visits

Vermonters most at risk of visiting an ER or their physician for urgent care are those with the lowest incomes and those without health insurance. Efforts to increase self- and clinical care management, which will result in fewer ER visits, should focus on this population, in addition to those who smoke or are obese. It is also important to explore characteristics of the major health systems within the Vermont counties reporting the lowest and highest rates of ER visits.

The models on the next page examine the relationship between certain variables and visiting an emergency room or a physician for urgent care for worsening symptoms related to asthma. The adjusted model adjusts for gender, race, insurance status, household income, education level, smoking, obesity, and depression status, and race.

Urgent Care: Having a low income is associated with an increased risk of visiting a doctor for urgent care of worsening symptoms due to asthma based on the adjusted model.

Emergency Room: Not having health insurance, having a low income, being a smoker, and being obese are associated with an increased risk of visiting an emergency room due to asthma based on the adjusted model.

We can also look at variation in ER visit rates by county. The county with the highest rates of ER visits is Rutland, with 68.3 visits/10,000 population. When looking at the PC Plus Medicaid program, Rutland, Windsor, and Orange counties reported the highest rates of hospitalizations. Bennington and Addison reported the lowest ER rates.

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Table 18. Emergency Room visits for asthma by county – Vermont residents, 2003.

	Number	Rate (per 10,000)
Lamoille	83	34.2
Orange	100	34.4
Orleans	134	49.4
Rutland	434	68.3
Washington	196	33.3
Windham	144	32.4
Windsor	226	39.0

	Number	Rate (per 10,000)
Addison	102	27.7
Bennington	110	29.6
Caledonia	135	45.1
Chittenden	462	31.0
Essex	31	47.2
Franklin	207	44.0
Grand Isle	30	40.1

Data source: Hospital Discharge Data

Data are for visits to emergency rooms in Vermont and New Hampshire hospitals.

Indications of Poor Asthma Management

Risk Factors for Emergency Room and Urgent Care Visits

Table 20. Factors associated with physician visits for urgent care or emergency room visits due to asthma - Vermont adult residents with current asthma, 2004-2005 (combined).

	Urgent care visits		Emergency room visits	
	Crude OR	Adjusted OR	Crude OR	Adjusted OR
Sex				
Male	0.74	0.61	0.7	0.55
Female	1.0	1.0	1.0	1.0
Ages				
18-24	1.0	1.0	1.0	1.0
25-44	0.64	0.58	0.63	0.82
45-64	0.8	0.68	0.78	1.01
65+	0.6	0.64	0.55	1.07
Insurance				
Yes	0.95	1.5	0.31*	0.32*
No	1.0	1.0	1.0	1.0
Household income				
<125% FPL	2.77*	1.75*	3.17*	2.69*
125-249% FPL	2.13	1.71	3.84	3.88
250-349% FPL	1.71	1.33	2.66	2.95
350-499% FPL	1.01	0.68	1.34	0.92
500% FPL	1.0	1.0	1.0	1.0
Education				
Less than high school	1.58	0.97	4.06*	2.16
High school or G.E.D.	1.68	1.27	2.51	1.97
Some college or technical school	1.29	0.89	2.78	2.5
College degree or greater	1.0	1.0	1.0	1.0
Current smoker				
Yes	1.0	1.0	1.0	1.0
No	0.67	0.71	0.5*	0.5*
Obese				
Yes	1.16	1.2	1.68*	2.16*
No	1.0	1.0	1.0	1.0
Depression				
Yes	1.47	1.32	1.75	1.23
No	1.0	1.0	1.0	1.0
Race				
White/Non-hispanic	1.0	0.94	0.53	0.6
Blacks and Hispanics	1.0	1.0	1.0	1.0

* = significance at 0.05

Data Source: BRFSS

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Indications of Poor Asthma Management

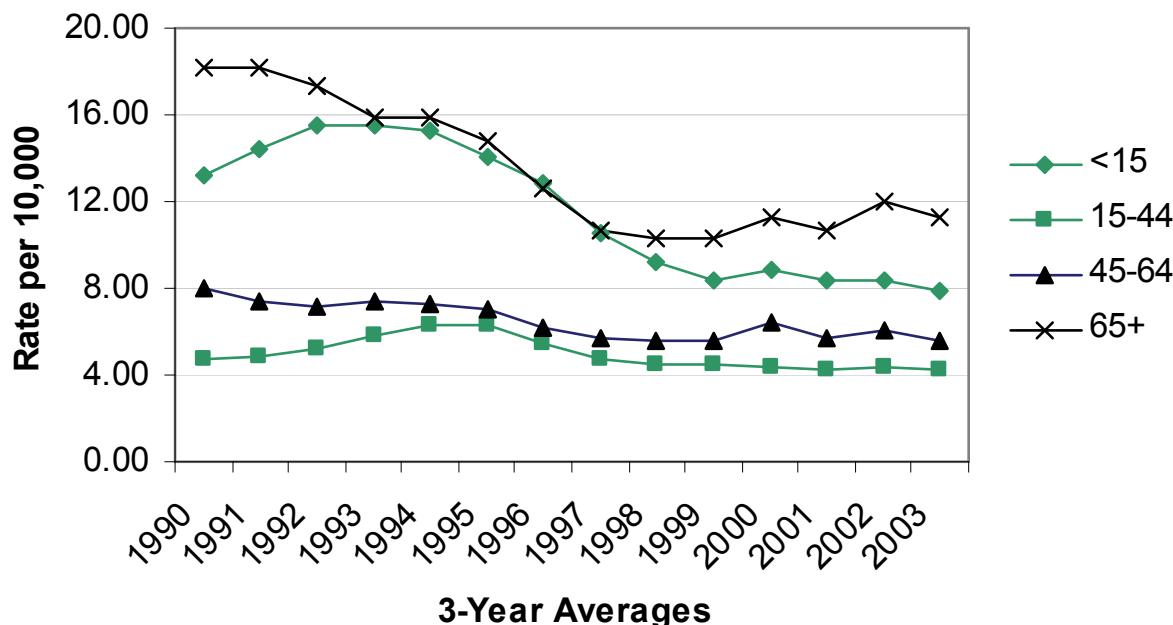
Hospitalizations and Deaths

As rates of hospitalizations for asthma have become relatively stable in the past five years, increased efforts are needed to continue the decline observed in the 1990s. Efforts to decrease the number of hospitalizations related to asthma should focus on the youngest and oldest age groups.

Hospitalization for asthma is a sign of ineffective management of the disease.

Vermont contributed 364 discharges with a primary diagnosis of asthma in 2003 to the national total of 418,789. CDC's national objective is to decrease hospitalization rates for asthma by 9% from 2000 to 2009. Vermont has made significant progress in decreasing hospitalization rates between 1989 and 2004, mainly due to large decreases in hospitalizations among youth under 15 and adults 65 and older. However, rates in Vermont have remained relatively unchanged since 2000. Vermont data tables are presented on the following page.

Figure 18. Asthma hospital discharge rates by age group, 3-year moving averages - Vermont residents, 1989-2004.



Deaths: Between 1999 and 2003 there were 35 deaths due to asthma in Vermont. Because of small numbers, data cannot be presented by year or other demographic breakdown. Research has suggested that following an asthma management plan may prevent deaths related to asthma.

Hospitalizations

Table 21. Asthma hospital discharge rates by age group - Vermont residents, 1989-2004.

	1989	1990	1991	1992	1993	1994	1995	1996
Total number of hospitalizations	469	486	525	503	551	581	546	486
Rate per 10,000								
<15	11.6	12.8	15.4	15.0	16.1	15.4	14.4	12.3
15-44	5.1	4.5	4.7	5.1	5.6	6.8	6.5	5.6
45-64	8.6	8.4	7.0	6.7	7.9	7.7	6.3	7.1
65+	15.9	18.4	20.3	15.8	15.8	16.2	15.9	12.3
Total	8.4	8.6	9.3	8.8	9.5	9.9	9.2	8.1

	1997	1998	1999	2000	2001	2002	2003	2004
Total number of hospitalizations	396	350	408	380	428	336	444	364
Rate per 10,000								
<15	1.8	7.7	8.1	9.5	9.2	6.5	9.4	7.6
15-44	4.1	4.4	4.9	4.2	4.2	4.2	4.6	3.9
45-64	5.3	4.7	6.6	5.6	7.0	4.6	6.7	5.4
65+	9.5	10.0	11.4	9.4	13.0	9.7	13.4	10.6
Total	6.6	5.8	6.8	6.2	7.0	5.5	7.2	5.9

Indications of Poor Asthma Manage-

Data source: Hospital Discharge Data

NOTE: These data include ER visits when the ER visit resulted in hospital admittance

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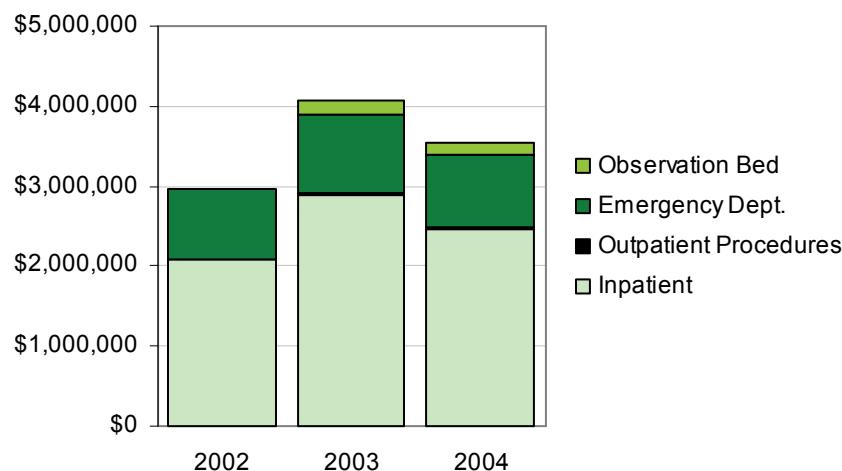
Indications of Poor Asthma Management

Costs

Improvements in asthma management will result in decreases in the number of hospitalizations and emergency room visits related to asthma. In addition to improving the overall quality of life of those suffering from asthma, these efforts will dramatically decrease health care costs related to asthma.

Hospital charges related to asthma were approximately \$3.5 million in Vermont for 2004. The national estimate for all hospital discharges with a primary diagnosis of asthma was over \$5 billion.

Figure 19. Costs related to asthma hospital visits – Vermont, 2002-2004.



Inpatient hospitalizations make up over two thirds of all hospital-related charges, costing over \$6,000 per visit on average. Emergency room visits make up over one quarter of all hospital-related charges, costing roughly \$400 per visit on average.

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Table 22. Costs related to asthma hospital visits – Vermont, 2002-2004.

	<u>2002</u>	<u>2003</u>	<u>2004</u>
In-patient	\$2,074,843	\$2,897,237	\$2,454,523
Out-patient	\$7,730	\$7,153	\$34,624
Emergency room	\$880,944	\$985,229	\$914,517
Observation beds	NA	\$177,294	\$139,543
Total	\$2,963,517	\$4,066,913	\$3,543,207

Data source: Hospital Discharge Data